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**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION**

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March 23, 1992

Ron Helgerson
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**WELL INVESTIGATION PROGRAM - PROPOSED BORINGS AT LOCKHEED PLANT B-1
(File 104.0676)**

Reference is made to your letter, dated March 13, 1992, discussing modifications and additions to proposed investigation borings for Area F at Plant B-1, previously described in your letter dated February 7, 1992. We have no objections to your implementation of this investigation, provided all work is completed as specified in the proposal, and complies with the additional requirements described below. Our review of this investigation included the B-1 Environmental Assessment and a field inspection of Area F performed by Regional Board staff Heather Stone and David Bacharowski on March 10, 1992. Area F investigation addresses Buildings 150, 151, 152, and 165 including approximately 38,000 square feet of building area, and adjacent areas exterior to these buildings covering approximately 96,000 square feet. The soil testing plan includes seventeen 10-foot borings, one 15-foot boring, two 20-foot borings, eight 40-foot borings, and eight 60-foot borings to evaluate various POINT source areas identified onsite.

Reference is also made to your letter of March 16, 1992, which proposes investigation borings within Area C at Plant B-1 to evaluate the potential contamination from the former use of this area as a runway. In this letter, you have proposed eleven 60-foot borings, and two 10-foot borings. Based on our conversation with Mr. Jim Hamilton of LFSC, the depth and number of these borings are designed also to yield necessary geologic information to evaluate a fine grained sand/silt unit that appears to be laterally extensive and may underlay a significant portion of Plant B-1 at approximately 60 feet below ground surface. We have no objections to your implementation of this soils investigation, provided that all work is completed as specified in the proposal, and complies with the additional requirements outlined below. However, due to the distributed nature of the potential source for this area (historic staining and discharge to ground surface), further work including soil gas investigation and additional borings may be required, in the future.

The following additional requirements apply:

1. Soil samples to be analyzed for volatile organic compounds (EPA Method 8240 Modified or 8260, EPA Method 8010, EPA Method 8020) should be analyzed within seven days whenever possible. This is considered a Regional Board recommended standard practice. At a minimum, EPA method holding times and conditions must be observed, with the holding period calculated to include the date of sampling.
2. Field sampling and testing must be responsive to indications of volatile organic compounds, as determined by field screening device(s). We recommend that a flame ionization detector (FID) be utilized for in field headspace analysis from discrete soil samples. Samples should be placed in appropriate containers and allowed to equilibrate for 10 - 15 minutes, either sitting in the sun or on a warmed surface prior to screening. As a contingency, any borings indicating VOCs at the planned completion depth must be continued to greater depth to explore the vertical extensiveness of any soil contaminants at that location. Calibration equipment must be onsite during all drilling operations. Given the relatively high detection limits of field screening equipment (FID/PID) (~1 ppm), field screening will provide only an indication of gross contamination.
3. Soil test borings to be completed within Area C should incorporate additional depth-specific drilling and analytical testing of soil samples not only to determine the presence of the silty/sand horizon, which may underlay this area, but also to determine the depth and thickness of this unit.
4. Provide, for reference, prior to doing any sampling onsite, a description of the analytical procedure to be used, "EPA Method 8240 Modified," including the analyte list of constituents, QA/QC, the column to be used, soil extraction procedure, and other pertinent procedural information.

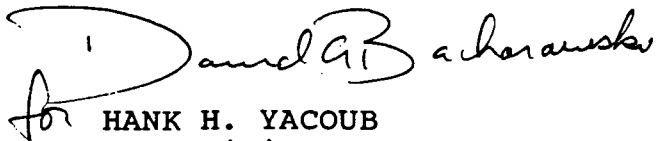
Enclosed are copies of workplan requirements for Initial and Supplementary Subsurface Engineering/Geologic Soil Investigation. These sheets outline minimum requirements for conducting of investigations for Well Investigation Programs. A final report containing the results of these investigations in Area F and Area C is due to this Regional Board by May 1, 1992.

In the February, 1992, Monthly Progress Report, you indicated that demolition activities for Plant B-1 would commence in April, 1992. A workplan for demolition that includes an investigation approach to slab/pavement removal, as well as your schedule and description of demolition phasing by area is required at least twenty one (21) days prior to proposed commencement of any at grade and/or subgrade

MR. HELGERSON
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demolition activities. The post-demolition investigation workplan must be approved by Regional Board prior to commencing any demolition activities. As previously mentioned, all buildings and Plant areas must be inspected and soil test borings located prior to performing any subsurface investigation or demolition activities.

Please notify us at least one week prior to commencing any drilling operations so we can schedule an inspector to be present. If your have any questions, Please call Heather Stone at (213) 266-7622.


for HANK H. YACOB

Supervising Water Resources
Control Engineer

Enclosure

cc: Colette Kostelec, U. S. Environmental Protection Agency,
Region 9
Gary Schultz, CalEPA, Toxic Substances Control Department
John Libby, City of Burbank Planning Department
Carolyn Barnes, City of Burbank, Public Services Department,
Water Operations
Jim Hamilton, LESC
A. L. Babcock, Tetra Tech

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

SUPPLEMENTARY ENGINEERING/GEOLOGIC SUBSURFACE INVESTIGATION
(WELL INVESTIGATION PROGRAM)

DATA REQUIREMENTS: All requirements in the WORK PLAN REQUIREMENTS for INITIAL SUBSURFACE INVESTIGATIONS must be met in conducting this additional investigation.

UNSATURATED ZONE (SOILS)

1. Ascertain lateral and vertical extent of contamination.
2. Determine soil properties which affect contaminant mobility in the vadose zone. Relate the specific residual contaminants with their potential long term effect on ground water quality.

SATURATED ZONE (WATER)

1. Determine specific aquifer properties for correct siting of monitoring well(s). Use of piezometer clusters is encouraged to ascertain aquifer properties.
2. Determine lateral and vertical extent of contaminant plume.

PROCEDURES

SOIL BORING

1. Justify and plot location(s) for soil sampling.
2. Explain sampling depth and drilling method.
3. Have an appropriately registered or certified personnel sign off boring logs.

DRILLING/SOIL SAMPLING

1. Describe sampling procedures:
 - o Method and equipment used to collect the samples with minimal loss of volatiles.
 - o Sampling interval (5 feet or at significant changes in soil/lithology as noted on the boring logs).
 - o Number and type of soil samples (only discrete, undisturbed samples are acceptable).
2. Sample water from any boring which penetrates a saturated zone after converting to a monitoring well or piezometer.

MONITORING WELL CONSTRUCTION/DEVELOPMENT

1. Include in the well design, specifications and construction details such as:
 - o Casing and screen materials, screen length and placement with respect to water table etc.,
 - o Proposed depth and type of annular seal,
 - o Time for cement to set before commencing development.
2. Provide for appropriate logging by qualified personnel.
3. Characterize aquifer materials for proper selection of filter pack and screen. Only commercially slotted screens are acceptable. Less than 10-20% of the filter pack should enter the well.

4. The boring should not penetrate a competent clay layer below the saturated zone.
5. Casing must be suspended and centralized such that it is not resting against the sides nor bottom of the hole prior to fixing in place.
6. Place grout of either cement or cement/bentonite in an appropriate manner to avoid bridging.
7. Establish benchmarks relative to mean sea level. Provide benchmark location and survey date. Measure water levels to 0.01 foot. Also provide well location using UTM Coordinates.
8. Describe methods to develop well such that the waters sampled are representative of the formation water. The water sampled must have less than 10 ppm settleable solids.

WATER SAMPLING

1. Describe details of sample collection:
 - o Water sampling devices to be used,
 - o Procedures to minimize loss of samples by adsorption and/or volatilization,
 - o Purge techniques, tests (temp., pH, conductivity) to assure the collection of a representative water sample.
2. Describe methods for handling the samples collected.

SAMPLE ANALYSES

GENERAL

1. The laboratory must be certified by the California Department of Health Services for the specific required procedures.
2. Laboratory procedures must be specified and QA\QC sheets must be submitted with the results in the technical report.
3. Limits of detection must meet EPA's practical quantitation limits.
4. Proper chain of custody procedures must be used.

SOILS: Specify EPA Methods to determine existing facility contaminants, also use the required EPA Methods 8260 or 8010/8020 to quantify volatile organics to EPA's practical quantitation limits. Specify detection limits.

WATER: Specify EPA Methods to quantify contaminants found in soil, also use EPA Methods 601/602 or appropriate 500 Series Methods for VOCs. Specify detection limits. Submit samples to the laboratory in unfiltered form and report sample turbidity.

REPORTS

Four copies of all reports are to be submitted with all requested information.

STATE OF CALIFORNIA
California Regional Water Quality Control Board
Los Angeles Region

WORKPLAN REQUIREMENTS
for
INITIAL SUBSURFACE ENGINEERING/GEOLOGIC SOIL INVESTIGATION
(WELL INVESTIGATION PROGRAM)

The objective of this engineering/geological investigation is to evaluate potential waste discharges which may impact ground water. Your workplan should include, but not be limited to, the following:

SITE INFORMATION: Characterize past and present specific business activities. List any previous businesses at the site. Describe storage, handling, use, and disposal procedures for chemicals, primarily chlorinated organics or aromatic solvents. Give name, address, and phone number of any landlord/lessor.

FACILITY MAP: Identify on a scaled facility map all potential sources for contamination, past and present. Examples include: chemical and waste storage, transfer and use areas including tanks and piping, clarifiers, sumps, pits. Indicate dates of completion of buildings or pavings where possible.

SITE SOILS AND GEOLOGY: Determine if site discharges have entered the vadose zone, define sources, and provide background geological data for the area. Use EPA or State Department of Health Services guidelines.

1. Provide rationale for the number and location of borings. Plot on facility map.
2. Provide reasons for proposed depth of each boring if less than the generally required depth of 40 feet. Additional depths may be required if ground water is encountered or if there is obvious contamination in the boring.
3. Identify proposed construction methods for borings.
4. Log all borings to provide characteristics of unconsolidated material per Unified Soil Classification System as well as all other appropriate information.
5. Provide a sampling plan to include equipment and procedures for collection and handling of geologic materials. A sampling interval of 5 feet, each change in lithology or changes in observed contamination is required starting at just below surface or surface covering.
6. Comply with chain of custody procedures. Discrete, undisturbed samples will be taken, sealed, and transported to the laboratory for analyses. Samples submitted for laboratory analyses are not to be used for field screening.

7. The proposed laboratory must be State Department of Health Services registered for each analytical procedure specified. EPA Methods 8260 or 8010/8020 are required. Supplement with Methods necessary for any site chemicals, past and present.
8. At a minimum, EPA sample holding times and conditions must be observed. Samples for volatile organic compounds should be analyzed within seven days whenever possible.
9. EPA practical quantitation limits (5 to 10 $\mu\text{g}/\text{kg}$ for selected VOC) are required. Analytical results must indicate detection limits and whether a chemical potentially exists (trace).
10. Minimum laboratory QA/QC requirements include: field and reagent blanks, calibration check standards, matrix spiked duplicates, total recoverables, laboratory quality control sample.

GROUNDWATER (HYDROGEOLOGY): Ground water must be sampled if any boring encounters a saturated zone. Site specific exceptions may be made in consultation with Board staff.

1. Provide a contingency plan for conversion of borings that encounter saturated zones to ground water sampling wells. This should include permitting and well design, construction, and development specifications.
2. Provide protocols for field analysis, water sampling, handling and transport.
3. EPA Methods 601/602 or appropriate 500 Series Methods must be used plus any appropriate EPA Methods for nitrates and any other chemicals used on site.

ADDITIONAL REQUIREMENTS:

1. Four copies of the work plan are to be submitted with all information requested.
2. Submit the results of any previous subsurface investigations conducted at the site.
3. Submit a time schedule. The proposed activities must be completed within 6 to 8 weeks of plan approval.
4. Work shall not proceed without prior approval. Staff is to be notified at least 10 days prior to initiating field work to permit observation of field activities and to take split or duplicate samples.
5. A CALIFORNIA REGISTERED GEOLOGIST OR ENGINEER OR CERTIFIED ENGINEERING GEOLOGIST WITH FIVE YEARS SOILS OR HYDROGEOLOGIC EXPERIENCE SHALL DIRECT OR CONDUCT THESE INVESTIGATIONS AND PROPERLY SIGN OFF THE FINAL REPORT FOR THE REPORT TO BE ACCEPTED AND APPROVED.